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ABSTRACT

This paper develops a theory of sex differences in the earnings of school personnel, with emphasis on the role of labor market segmentation. Several aspects of the theory are then tested using data for the San Francisco school system in 1879. Section 1 develops a theory of sex differences in the earnings of school personnel. Section 2 discusses the data, the specification of the model, and the regression results. In section 3, the results are used to analyze the components of the female/male salary ratio. The concluding section summarizes the work and briefly compares the labor market in the study with labor markets in public education today. Results of the study showed the importance that labor market segmentation can have in determining the sex salary differential. (Author/LD)

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# THE FEMALE/MALE SALARY DIFFERENTIAL IN PUBLIC SCHOOLS: SOME LESSONS FROM SAN FRANCISCO, 1879

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THE FEMALE/MALE SALARY DIFFERENTIAL IN PUBLIC SCHOOLS:

SOME LESSONS FROM SAN FRANCISCO, 1879


## Abstract

This paper develops a theory of sex differences in the earnings of school personnel, with emphasis on the role of labor market segmentation. Several aspects of the theory are then tested using data for the San Francisco school system in 1879. We find that, holding constant human capital variables (experience and education), sex played a significant role in determining the position and type of school of employment among school personnel and that human capital variables were less important than segmentation variables (position and type of school) in explaining the female/male salary differential.



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# THE FEMALE/MALE SALARY DIFFERENTIAL IN PUBLIC SCHOOLS: SOME LESSONS FROM SAN FRANCISCO, 1879

In recent years, economists have become increasingly interested in studying and explaining the female/male (F/M) pay differential. Although earlier work on this topic by Fawcett and Edgeworth highlighted the connection between sex differences in pay and sex differences in occupation, with the exception of Bergmann, modern neoclassical theoreticians have not emphasized the role of occupational segregation in determining the F/M pay differential.[1] Rather, neoclassical explanations of the sex salary differential have stressed, on the demand side, either the taste for discrimination (women are paid less than men in order to compensate employers for the disutility of hiring women) or statistical discrimination (women are paid less than men to compensate risk averse employers for the less reliable information which is available about women employees). On the supply side, neoclassicists have relied on the human capital construct (sex differences in pay reflect sex differences in human capital).[2]

Segmented labor market (SLM) theorists, on the other hand, have, as their appellation suggests, made the relationship between occupational segregation and pay differentials a central focus of their work.[3] Although SLM theories have not been as rigorously formulated as their neoclassical counterparts, the two key elements of their approach are as follows. First, either to enhance efficiency, or, in the more "radical" versions, to achieve social control, employers find it useful to segment the work force so that men and women are assigned to mutually exclusive job ladders. Second, the job evaluation process within internal labor markets

assigns higher wages or salaries to those job clusters reserved for males. While persisting pay differentials by sex are an anomaly for the neoclassical model, in the SLM theory, they are a fully expected outcome.

Clearly, discrimination, sex differences in human capital and labor market segmentation all influence the F/M salary differential. In this paper we seek to analyze that differential among public school teachers and supervisors (hereafter called school personnel) in San Francisco in 1879. While our model employs variables to measure discrimination and human capital as well as labor market segmentation, our analysis focuses primarily on the segmentation variables. We find that much can be learned from a segmentation approach.

The paper tests the following three hypotheses, derived from our theoretical discussion in Section One. (1) Holding constant human capital variables (experience and education), sex played a significant role in determining the position and type of school of employment among school personnel. (2) Human capital variables were less important than segmentation variables (position and type of school) in explaining the F/M salary differential. (3) Holding constant human capital variables and position held, a greater percentage of the F/M salary ratio stemmed from sex differentials in pay <u>across</u> types of schools than from sex differentials <u>within</u> types of schools.

Examination of an urban labor market for teachers in the late nineteenth century is extremely instructive for understanding the process of labor market segmentation and the resultant F/M salary differential. For not only have school systems consistently employed a substantial fraction of educated women, but also, and more importantly, as pioneer large bureaucracies, these school systems introduced elements of labor market segmentation and salary differentiation by sex that later appeared in other organizations.[4]

Focusing on the San Francisco school system in 1879 is particularly interesting. First, the data we have for San Francisco are remarkably complete, providing information on salary, education, number of years of teaching experience in San Francisco, place of employment, extent of administrative responsibilities and, for women, marital status. Second, by 1879 the city's public schools had been keenly affected by feminization and sex stratification, so that it is possible to clearly observe the effects of these labor market segmentation processes on teachers' salaries. However, at that same point in time, the rest of public education in California had been much less subject to feminization and sex stratification, thus inviting comparison with the situation in San Francisco.

Finally, in 1874, California passed an equal pay act for school personnel. One of the chief lobbyists for this law was Kate Kennedy, a prominent and controversial grammar school principal in San Francisco.[5] As a result, although the act may have been unknown in other parts of the state, we are assured of its publicity within the San Francisco schools. By examining San Francisco salaries several years after the passage of this act, we are able to make some indirect assessment of the act's effects.

The plan of the paper is as follows: Section one develops a theory of sex differences in the earnings of school personnel, with emphasis on the role of labor market segmentation. In section two we discuss the data, the specification of our model and our regression results. In section three we use these results to analyze the components of the F/M salary ratio. In the concluding section we summarize our work and briefly compare the labor market in our study with labor markets in public education today.

## I. Theory

Throughout the 19th century, two related processes of labor market segmentation simultaneously took place in teaching. First, public school teaching became feminized: the proportion of women teachers in public schools increased markedly and women became the overwhelming majority of teachers.[6] Second, during the same period, the teaching profession became stratified by sex. Men were channelled into jobs as principals, vice principals or secondary school teachers -- jobs which offered considerable scope for individual creativity. Women, on the other hand, were most often teachers in the lower grades. They were carefully supervised, encouraged to be responsive to rules and authority and required to adhere strictly to a rigidly prescribed curriculum.[7]

Feminization and sex stratification of teaching first took place in the cities.[8] In small rural schools, men and women tended to be employed in more equal numbers and although women were more likely to teach in the summer term (when the older boys and men teachers were engaged in agricultural work) and men in the winter term, rural teachers of both sexes generally had similar jobs. Both taught ungraded classes in one-room school houses, exercised considerable independence, discretion and autonomy and operated without benefit of any formal on-site supervisors.

Although the feminization and sex stratification of teaching took place simultaneously, we will separately analyze the emergence of each. While both were the result of changes in labor supply and demand, supply forces were more important in explaining feminization whereas demand factors were particularly critical in the development of sex stratification.

Demand and Supply Factors Underlying Feminization

On the demand side of the labor market, the feminization of teaching was no doubt facilitated by the marked increase in the demand for teachers in urban areas during the latter part of the nineteenth century. This stemmed, in turn, from population growth, increased commitment to universal education (including education for women) and lengthening of the school term. On the supply side, two underlying forces were influential in moving women into teaching. First, young women were increasingly being educated and, second, their domestic services were less and less frequently needed by their parents as production moved out of the home. Thus, young educated women represented a growing pool of prospective teachers.

An additional prominent supply factor in the feminization of teaching was women's exclusion from alternative occupations. In the post-Civil War period, especially in urban areas, educated young men began to move toward alternative attractive job opportunities outside of teaching. For women, however, these alternatives were unattainable; gatekeepers in commerce and the professions excluded women and women themselves were often socialized to abjure these occupations.[9] As a result, the availability of women for teaching at prevailing wages exceeded the availability of men. In the words of the San Francisco Superintendent of Schools in 1878, "While our offices are thronged with able women anxious for employment, we have comparatively few male applicants."[10]

Because women had fewer employment alternatives than men, their supply privce was generally lower. One might have expected, then, that as school districts took advantage of the "cheapness" of women personnel, teaching would have become 100 percent feminized. However, developments with regard to labor market sex stratification ensured that this would not be the case.

Demand and Supply Factors Underlying Sex Stratification

In developing a theory of labor market segmentation, Piore and Doeringer stress the technological imperatives behind segmentation while Reich, Gordon and Edwards (RG&E) emphasize social control factors. In the case of teaching, organizational technological change (i.e., change affecting the organization of the enterprise) seems to have been an important motivator of labor market segmentation. Social control factors also played a role, though in our view they operated differently from the dynamic described by RG&E.

As schools moved from rural to urban sites, three organizational technological changes developed in teaching. First, as schools became larger, classes became graded; that is, children were taught in groups divided by age. Second, as schools became larger and graded, they became bureaucratized: the curriculum for each grade became strictly delineated and time-consuming management of schools and supervision of teacher performance were required. Third, as a result of the expansion of knowledge and the growth of the middle-class, increasing numbers of youngsters wished to remain in school beyond the usual eight years; gradually, the high school evolved. As a consequence of these technological developments, urban school boards found they could produce their educational services most efficiently by subdividing the numerous functions of the one-room school teacher.

Technological factors alone, however, cannot explain why it was that a sexual division of labor developed in teaching with women hired largely for primary school teaching and men for secondary school teaching and management. At least three additional demand side factors, all related to the then current sex role stereotypes, are important in explaining why, despite the fact that

women were cheaper to employ, urban school boards hired men to fill certain positions.

For our purposes, the important sex-role stereotypes of the period were as follows: For women, teaching was regarded as merely a prelude to their true vocation, marriage and motherhood. At the same time, women were considered especially well-suited for the teaching of young children; "...they seem designed and fitted by nature as the appropriate educators of childhood..." was the way the Hon. W. C. Larabee of Indiana put it.[11] Finally, women were regarded as relatively docile and particularly responsive to rules and authority. Men, on the other hand, were regarded as "permanent" members of the work force (although their attachment to jobs as teachers was generally rather weak). Men were also considered to be good managers and good disciplinarians and, in general, had higher status as compared to women of their own social class.

The first effect of these stereotypes concerns perceived managerial training costs. The fact that women were regarded as impermanent members of the work force meant that school boards believed they could decrease their overall management training costs (mainly the cost of having inexperienced managers) by hiring only men for managerial positions. However, even when women did maintain their attachment to the labor force, the administrative position they obtained were generally of low status, e.g., superintendents in small districts or elementary school principals,[12] thus indicating that considerations beyond training costs were also important in boards' decisions.

The second effect of sex role stereotypes relates to school boards' desires to more securely link the schools to the (male) power bases in the surrounding community, an essential goal for public bureaucracies dependent on local support. By placing men in top visible positions, school boards could more easily achieve this goal. For men not only had obvious overt status characteristics which served to raise the status of schools in local eyes, but also, through all-male clubs and sports, had far easier access than women to key members of the areas' business and political power structures. Men's higher status vis a vis women also particularly suited them for employment in high schools, institutions that during their early development were quite desirous of maintaining their distinctively high status position.

Finally, conforming to widely held sex-role stereotypes was an excellent way of maintaining social control at the organization level. By restructuring jobs to take advantage of sex-role stereotypes about men's disciplinary strengths and women's responsiveness to rules and authority, school boards were able to enhance their ability to maintain control over the curricula, students and personnel of rather large bureaucracies.

The design for sex stratification which materialized from demand side considerations was reinforced by two elements on the supply side. First, under the proposed schema, the vast majority of jobs in teaching could be occupied by those whose supply price was lowest, i.e., women. Second, the fact that men and women teachers and supervisors held the same sex-role stereotypes as school boards assured the workability of the system, and thus further cemented the emerging job structure.

In summary, the feminization of teaching in the post-Civil War period was influenced by the increase in the demand for teachers, the increase in the supply

of educated women and the exclusion of educated women from alternative occupations. The stratification of teaching, occurring at the same time, was primarily a result of changes in the organizational technology of urban education which made a division of labor more efficient. The particular sexual division of labor which emerged was a consequence of school boards' desire to minimize management training costs (such as they were), more securely link the schools with the power bases in the surrounding community, and maintain social control at the organization level. Supply side factors tended to provide further justification for the sex division of labor which was adopted.

Implications for the Female/Male Salary Differential

Following our analysis, we would expect that where teaching was less feminized and men and women were performing similar tasks, the F/M salary ratio would be relatively higher than where teaching was feminized and sex stratified.[13] For the 28 states for which census data are available for 1880, the correlation between the percentage of women in teaching (a measure of the two closely related processes of feminization and sex stratification) and the F/M salary ratio is indeed negative, -.66.[14] Alison Prentice also notes a negative relationship between the F/M salary ratio and the feminization of teaching in her study of Canadian education from 1845 to 1875.[15] Finally, a comparison of San Francisco with California as a whole also suggests an inverse relationship between the variables. In 1880, in California, where 66 percent of public school personnel were women, the F/M salary ratio was .81.[16] However, in 1879, in San Francisco, where 92 percent of public school personnel were women, the F/M salary ratio was .61.[17]

As a corollary to the proposition that the degree of feminization and sex stratification is likely to be negatively related to the F/M salary differential, we suggest that segmentation variables (position and type of school) are likely

to be particularly important in explaining the F/M salary differential within a highly feminized and sex-stratified school district. To test this proposition, we have developed the three hypotheses discussed in the introduction.

## II. The Data, Model and Results

### Data

The data used to test our hypotheses are taken from the 1879 Report of The Superintendent of Common Schools for San Francisco. Table 1 provides a sample of the data format. For each public school in San Francisco (37 primary, 15 grammar and 2 high schools) each of the 624 teachers employed is listed by name.[18] For each teacher, information is provided on the date of "election" (the date that teaching in San Francisco commenced), "grade of certificate" (type of teaching diploma held), grade taught, annual salary and home address. (Notions of privacy rights have certainly changed over the century!) School administrators are specifically designated for each school and the sex of each teacher or administrator is easily discerned: women are listed as Miss or Mrs., men without any formal mode of address.

Feminization and sex stratification became firmly established in the San Francisco school system over a rather short period of time. As late as 1847, San Francisco had a population of less than 500.[19] But as a result of the gold rush, the city grew rapidly after 1848. Public education in San Francisco began in 1850, the same year in which the state legislature incorporated the city.[20] By 1870, San Francisco was considered to have one of the most thoroughly graded school systems in the nation.[21] If we compare, for 1880, the average number of teachers per school (a rough measure of school-gradedness) in San Francisco with that in the rest of California, we find that the ratio in San Francisco was 11.6, while in every other county in the state it was $\leq 1.8$.[22]

By 1879, feminization and sex stratification were well entrenched in the city's public schools. As indicated earlier, men comprised only 8 percent of all personnel. However, they were 40 percent of all high school teachers and 35 percent of all principals. In grammar schools, men were two-thirds of all principals and both high school principalships (including the one at the girls' high school) were held by men. While about half (52 percent) of all women school personnel in the city were teachers in primary schools, only 4 percent of male personnel were so employed.

Model

Our model of salary determination is a three-equation recursive system:

(1) Position = $f_1$ (Male, Experience, Education$^*$),

(2) Type of School = $f_2$ (Male, Experience, Education$^*$),

(3) ln Salary = $f_3$ (Male, Experience, Experience$^2$, Education$^*$, Position$^*$, Type School$^*$)

where Education$^*$, Type School$^*$ and Position$^*$ represent vectors of dummy variables.[23]

Following our theoretical analysis, the sex dummy and the segmentation variables (position and type of school) are of major interest, the human capital variables (education and experience) being viewed primarily as control variables.[24] The model indicates that position and type of school are likely to be affected not only by human capital variables but also by maleness per se. In addition, we expect that human capital variables and maleness will influence salary both directly -- as measured by the coefficients in the salary regression -- and indirectly -- as measured by the coefficients in the position and type of school regression. Although it may, of course, be argued that our male variable is in part merely a reflection of the differences between men's and women's reservation wages, we interpret it as a measure of discrimination. In our view, after

experience, education, position and type of school are held constant, sex differences in salary may properly be regarded as discrimination, especially since, in the particular labor market under discussion, sex differences in reservation wages were in part the result of discrimination in other occupations.

Results

Table 2 gives, for each sex, the means and standard deviations of the variables included in the salary regressions. As may be calculated from line 1, for all personnel, the F/M salary differential was .61. The experience variables are of particular interest. Men had an average of 6.9 years of experience in the San Francisco school system; women had almost precisely the same amount of within San Francisco teaching experience, 6.6 years. However, 70 percent of men held Life diplomas as compared with only 23 percent of women, leading us to surmise that men had more teaching experience outside of the San Francisco school system than did women.

Position

Regression 1 in Table 2 reports the results of regressing position on male, experience, and education. As is clear from the first entry on that line, sex was a key determinant of position held. After holding constant education and experience, men in the San Francisco public school system could expect to be slightly more than one full position higher than women.[25] Position was also significantly affected by Experience, and holding a State Education or Life diploma. However, the combined effect of these human capital variables on position held was only about half the effect of sex.

Type of School

Regression 2 in Table 2 reports the results of regressing type of school of employment on male, experience and education. As in the regression examining

the determinants of position, we find that the coefficient on the male dummy is significant at the 1 percent level. Holding constant experience and type of diploma held, being male raised type of school of employment by almost four-tenths of one point.[26] Hypothesis 1, that sex played a significant role in determining the position and type of school among school personnel, is clearly upheld.

With the exception of second grade diploma, all of the human capital variables are significantly related to type of school. However, it should be noted that in both the position and type school regressions, the $R^2$s are rather low, (.28 and .17, respectively) indicating that human capital variables and sex explain a rather small proportion of these variables.

Salary

Early in our work we determined that the appropriate specification of the earnings equation required running separate regressions for women and men.[27] To provide some insights regarding the relative power of the human capital variables (experience and education) and the labor market segmentation variables (position and type of school) in accounting for variation in the log of earnings, we ran three regressions for each sex: regressions with human capital variables only (3M and 3F), regressions with segmentation variables only (4M and 4F) and regressions with both human capital and segmentation variables (5M and 5F).

As may be seen in Table 2, equation 3M, if we include only human capital variables in our regression, we are not particularly successful in accounting for the variation in earnings among the 57 male personnel ($\bar{R}^2$ = .18). On the other hand, including only position and type of school in our regression (4M), we are able to explain almost 70 percent of the variance in the earnings of male personnel ($\bar{R}^2$ = .79). All of the position and type of school dummies are significant and have the expected signs. It should be recalled, of course, that

since the segmentation variables are themselves affected by the human capital variables, the indirect effects of experience and education are included in regression 4M.

When we run a regression for men employing both human capital and segmentation variables, we obtain an $\bar{R}^2 = .77$, indicating that for men, including the direct effects of the human capital variables does not add to the explanatory power of our model. Men's salaries were determined by position and type of school with education and experience having their effects only indirectly, through their influence on these segmentation variables.

Among women personnel, the human capital model (3F) performs more creditably, $\bar{R}^2 = .57$. The experience and education variables have the expected signs and, with the exception of the State Education diploma, are significant. Nonetheless, a segmentation model (4F) does better in explaining the variance in women's salary, $\bar{R}^2 = .70$. All of the segmentation variables are significant and have the expected signs.

For women, a regression combining human capital and SLM variables (5F) explains 83 percent of the variance in annual salaries. Clearly, among female personnel although not among men, experience and education affect salary directly as well as indirectly through position and type of school.[28]

The Effects of Marital Status on Women's Earnings

To test the possibility that part of the F/M salary differential was the result of discrimination against married women (over and above that faced by all women), we added to regression 5F a dummy variable equal to 1 for the 20 percent of women in our sample who were married.[29] Unfortunately, for purposes of testing the effect of marriage on womens' salaries, this measure of womens' marital status is less than ideal, for given the time and place of our study, it is

likely that a substantial fraction of our so-called married women were, in fact, widows. It would have been desirable, for purposes of labor market analysis, to have had a separate marital designation for these women.

In the late nineteenth century context, one can argue that, among women, being married had both negative and positive effects on salary. On the negative side, it is possible that married women were more geographically tied (because of their husbands' employment) than single women and thus had a lower reservation wage. It is also possible that school boards assumed that married women "needed" income less than single women and, accordingly, paid them less. On the positive side, however, one can argue that married women may have been paid more than single women because they were viewed as more nurturant (less old-maidish). The importance of nurturance among primary school teachers in particular was often stressed in the late nineteenth century.[30] Finally, based on the assumption that most educated married women did not work in the nineteenth century, it is possible to argue that those married women who did teach were particularly productive (either because they were particularly dedicated or talented or because they had a particularly great need for income) and thus merited, and received, higher salaries than single women.[31]

These negative and positive factors may have served to cancel one another out. In any case, when the marriage dummy was added to regression 5F, it did not attain statistical significance.

## III. Analysis of Salary Differences by Sex

### The Relative Importance of Human Capital and Segmentation Variables

The F/M salary differential may be conceptualized as consisting of three parts: (1) that part due to sex differences in human capital "endowments"; (2) that part due to labor market segmentation, i.e., sex differences in job

"endowments"; and (3) that part due to differences in rewards to "endowments" (generally called discrimination). Separation of the salary differential into these three parts can be achieved by using female weights or male weights, neither being superior on theoretical grounds.

In Table 3 we present the results of decomposing the F/M salary differential. Following Blinder (1973) we use male regression coefficients to weight mean sex differences in "endowments" and female means to weight sex differences in regression coefficients.[32] Regressions 5M and 5F are used for the computations; formulae are presented in the table's note.

Hypothesis 2, that education and experience were less important than position and type of school in explaining salary variation by sex, is confirmed by Table 3. However, the reader is reminded that the human capital variables also affected salary indirectly, through the segmentation variables, and that our experience and education variables do not fully capture years of teaching experience prior to appointment in San Francisco. Only 5 percent of the F/M salary differential is attributable to the direct effects of sex differences in human capital "endowments", while sex differences in position and type of school "endowments" accounted for 37 and 45 percent of the differential, respectively. Sex differences in all three types of "endowments" accounted for 87 percent of the differential, leaving 13 percent to what is generally regarded as discrimination. Obviously, five years after its passage, the California Equal Pay Act for public education had not yet become fully effective in San Francisco. Moreover, given our earlier analysis, it is clear that sex discrimination was also a factor in position and type of school "endowments".[33]

With respect to the details of sex differences in rewards, we find that, in fact, women were somewhat better rewarded per unit of human capital than were

men and that sex equality in rewards seems to have been the rule for administrative positions. The major sex disparity in rewards was in the type of school category. Other factors held constant, the rewards for grammar and high school teaching were far greater for men than for women. (See the last two columns of Table 2.)

Table 3 also confirms hypothesis 3, that holding constant experience, education and position, a greater percentage of the F/M salary ratio stemmed from sex differentials in pay <u>across</u> types of schools than from such differentials <u>within</u> types of schools. The term in line 3 of Table 3 may be interpreted as the salary differential that would have pertained if, human capital variables and position held constant, men and women had been paid identically within schools so that all of the differences between the mean male and mean female salary could be attributed to differences in the distribution of men and women across types of schools (an interschool effect). Similarly, line 6 in Table 3 may be interpreted as the salary differential that would have pertained if, human capital and position held constant, men and women had been distributed identically across types of schools, so that the only source of variation between the mean male and mean female salary resulted from sex differences within schools (intraschool effect). The interschool effect accounted for almost two-thirds (63 percent); the intraschool effect for about one-third (37 percent) of the total effect of the type school variables on the F/M salary differential.

## IV. Conclusion

In this paper we have sought to develop a theory of the feminization and sex stratification of teaching and to use the insights of that theory to explain the rather low F/M salary ratio among school personnel in San Francisco in 1879. The three hypotheses proposed were confirmed by our analyses. We found that

among school personnel in San Francisco, holding education and experience constant, sex played a significant role in determining the position and type of school of employment. We also concluded that education and experience were less important than position and type of school in explaining salary variation by sex and that, holding constant education, experience and position, a greater percentage of the F/M salary ratio stemmed from sex differentials in pay across types of schools than from sex differentials within types of schools. We regard these results as evidence of the importance which labor market segmentation can have in determining the sex salary differential.

According to two recent studies, sex differences in the salaries of women and men teachers appear to be less pronounced in modern times than they were in San Francisco circa 1880. Henry Levin, in an unpublished study of 1,582 teachers' salaries in "Westmet" (the San Francisco-Oakland SMSA) in 1965 found that after holding constant experience, years of schooling, certification, attendance at summer institutes, undergraduate major, verbal facility, and type of school of employment, being female served to lower annual salary by about $640, yielding a corrected F/M salary ratio of .92.[34]

Joseph Antos and Sherwin Rosen, using 1965 data from the Coleman Report, found that among white teachers the uncorrected F/M salary ratio was .87. Correcting for experience, education, verbal ability, tenure, geographic region and a variety of school and neighborhood factors, the F/M ratio increased to .95.[35] In our view, it is noteworthy that the increase in the F/M salary ratio has been accompanied by a decline in the feminization of teaching. In Levin's San Francisco-Oakland sample, for example, women were only 67 percent of all teachers.

In some ways, the employment situation for women teachers has changed considerably over the past 100 years. Equal pay for equal work is now a widely

accepted principle in teacher salary administration. Moreover, in most school district salary schedules the pay premium for high school teaching has been removed. In San Francisco, the school district moved to a "basic single salary schedule", eliminating the distinction between elementary and secondary teachers, in 1947-48.[36]

However, the labor market segmentation built into teaching during the nineteenth century has remained entrenched. In 1970-71, for example, a National Education Association survey revealed that while women were two-thirds of all public school teachers, they were only 15 percent of all principals (less than 4 percent of all high school and junior high school principals) and less than 1 percent of all school superintendents.[37] The barrier to sex equity in educational employment is no longer the one faced by Kate Kennedy in the 1870s, when she fought for the equal pay act, but rather the more intractable problem of sex stratification by position. The challenge today for public education, as in other sectors of the economy, is to design and implement policies to bring women into managerial positions.[38] The early predominance of sex segmentation by position in public education, combined with its tenacious persistence over the past century, should alert us to the likely difficulty of achieving this goal. On the other hand, recent changes in some of the underlying determinants of the feminization and sex stratification of teaching (e.g., women's exclusion from alternative occupations and powerful sex-role stereotyping) offer a basis for predicting a future decline in the sex segmentation of teaching and, concomitantly, a further increase in the F/M salary ratio among school personnel.

FOOTNOTES

*The authors are, respectively, Assistant Professor of Economics at the Stanford University Graduate School of Business, and law student at Santa Clara University. The data analyzed in this paper were also utilized in Best's Undergraduate Economics Honors Thesis at Stanford University. This paper is part of a larger on-going project on the feminization of teaching with David Tyack. We wish to thank Tyack, and also Katherine Poss, for many stimulating discussions on this topic and Nancy S. Barrett, Barbara B. Bergmann, Francine Blau, Marianne A. Ferber, Robert Flanagan, Henry M. Levin, Aline Quester, Elyce Rotella and Joan Talbert for helpful comments on an earlier draft.

1. See Fawcett (1918), Edgeworth (1922), and Bergmann (1971; 1974).

2. See Becker (1957; 1964), Arrow (1973), Phelps (1972), Spence (1973), and Mincer and Polocheck (1974).

3. See Blau and Jusenius (1976), Doeringer and Piore (1971), Oppenheimer (1970) and Reich, Gordon and Edwards (1973). An interesting comparison of the neoclassical and SLM theories may be found in Cain (1976).

4. In each of the Census reports, from 1870 to 1970, teaching represented one of the five leading occupations for women. See Blaxandall, et. al, (1976). After the invention of the typewriter, office work was segmented in the same way teaching had been segmented earlier. See Rotella (1977).

5. The equal pay law stated, "Females employed as teachers in the public schools of this State, shall in all cases receive the same compensation as is allowed male teachers for like services, when holding the same grade certificates." See Cloud (1952), p. 60. For a discussion of Kate Kennedy, see Tyack (1974).

6. Unfortunately, national data on the proportion of all teachers who were women are unavailable prior to 1870. In Massachusetts, which led the country in the feminization of teaching, women comprised 56 percent of school personnel in

1834 and 78 percent in 1860. See Vinovskis and Bernard (1973). In Ohio, which was somewhat more typical, women were 39 percent of all teachers in 1840, and 46 percent in 1850. See Woody (1929). The Civil War clearly accelerated the feminization process. For example, in Ohio between 1862 and 1864, women increased from 48 percent to 59 percent of all teachers. See Elsbree (1939). Nation-wide, women were an estimated 60 percent of public school teachers in 1870; by 1900, that proportion had increased to 70 percent. See U.S. Office of Education (1870; 1900).

7. This stratification is related to the primary independent and primary subordinate stratification described by Reich, Gordon and Edwards. For more details, see their article (1973).

8. For example, in both 1870 and 1880 among the states for which U.S. Office of Education data are available, the correlation between the percentage of the population living in urban areas and the percentage of female teachers was .70. In 1888, in the United States as a whole, women were an estimated 63 percent of all teachers, but an estimated 90 percent of teachers in cities. See Woody (1929) and Tyack (1974). For a discussion of teachers in rural areas, see Elsbree (1939).

9. For examples of women's exclusion from medicine and law see Smuts (1971); Brownlee and Brownlee (1976).

10. See San Francisco, Superintendent of Public Schools (1878), p. 41.

11. See Sklar (1973); and California, Department of Public Instruction (1865), p. 45.

12. See Clement (1975).

13. Another reason for the lower F/M salary ratio in cities may be that while in rural areas men could teach in addition to holding another job, in

urban areas teaching required a primary employment commitment and thus had to be "appropriately" remunerated.

14. See U.S. Census Reports (1880).

15. See Prentice (1975).

16. See California, Department of Public Instruction (1880).

17. See San Francisco, Superintendent of Public Schools (1879).

18. Fifteen teachers of music and art, 24 teachers employed in evening schools and 2 teachers employed in the ungraded school are excluded from our study.

19. This estimate is based on the following evidence in Bancroft (1888), p. 743, "And it was a liberal sum...for a town of 300 inhabitants to give to the survivors of the Donner Party in February 1847." Also Watkins (1973), p. 81, notes that in early 1847, when Yerba Buena was renamed San Francisco, the city's population was estimated at about 460.

20. Dolson (1964). Actually, a public school had opened in San Francisco in 1848, but it closed that same year when several children and the teacher in charge left for the gold country.

21. Ibid.

22. See California, Department of Public Instruction (1880).

23. Grade taught was not used as a dependent variable in the salary regressions because we did not have information on grade taught for all teachers and because grade taught was highly correlated with type of school.

24. Experience is defined as the number of years of teaching experience in San Francisco, calculated by subtracting the "year of election" from 1879. Unfortunately, we have no measure of teaching experience prior to "election" in San Francisco. However, some of our education dummy variables include, in part,

a total experience component. Teachers and administrators in 1879 held one of six types of diplomas: Third Grade, Second Grade, First Grade, State Education, Life, and Language (including French; German; French and German; and Latin and Greek). First grade diplomas (or certificates) represented a higher level of achievement than second or third grade diplomas. State Education diplomas were granted to those with five years of teaching experience who had held first grade certificates for at least one year. Similarly, Life diplomas were awarded to those with ten years of teaching experience who had held State Educational diplomas. The reference group for the education variables consists of those who held the first grade diploma.

To some small extent, the education variables may be less than perfect measures of ability, for there appears to have been some fraud involved in the awarding of diplomas. It was apparently well-known that copies of the questions for teachers' examinations could be secured in advance, and, indeed, in November 1877, the editor of the San Francisco Evening Bulletin not only secured these questions in advance, but published them in the evening paper. By 1879, however, those who had obtained diplomas fraudulently had apparently been reexamined or dismissed. See Dolson (1964).

25. The significant coefficient on sex in the position regression indicates a significant difference in the constant of the female and male regressions. To test for additional differences in the slopes of the two regressions, we used a Chow test to compare regression 1 with a regression in which there was not only a male dummy variable but also separate independent variables for each sex. Comparing the $R^2$s for the two regressions, we accept, at the 5 percent level, the null hypothesis that the slopes of the male and female regressions were the same. ($F_{6,614} = .735$).

26. To test whether the type of school regression might be more accurately specified by 2 separate regressions, one for each sex, we performed a Chow test, as explained in note 25. Again, we found that the difference in slopes of the male and female regressions were not significantly different at the 5 percent level. ($F_{6,614} = .465$).

27. After performing the Chow test discussed in note 25, we obtained an $F_{12,604} = 4.97$, indicating that the slopes of the male and female regressions were significantly different at the 1 percent level.

28. It is interesting to speculate about why the human capital variables are a better predictor of salary among women than among men. It may well be that while women's salaries were generally determined according to set rules and procedures which gave consistent weight to experience and type of diploma, men's salaries were not. For example, in order to recruit a man for a particular post, school boards may well have sometimes disregarded the salary schedule and paid a higher salary than would have been dictated by human capital variables alone.

29. It is notable that 20 percent of the women teachers in San Francisco in 1879 were married. By 1890, it appears that only 11 percent of all women teachers in San Francisco were married (or widowed). (Estimate based on U.S. Bureau of the Census (1890), Part II, p. 728.) The causes of this decline would be interesting to trace. Employment bars against married women probably did not arise until the 1890s when educators began to write of the "woman peril" in the schools. For example, it was not until the early years of the twentieth century that the New York Board of Education adopted a by-law prohibiting the employment of married women. See Woody (1929), p. 503. Although we do not know precisely when the practice of discriminating against married women began in California, we do know that some districts did eventually prohibit their employment. In

1927, following the famous Grigsby case in the California Supreme Court, the California Attorney General indicated that women teachers could no longer be prevented from teaching based on marital status. See Cloud (1952), p. 152.

30. See Sklar (1973), Chapter 12.

31. This argument is presented in Blau (1977).

32. See Blinder (1973).

33. Regressions 1M and 1F and 2M and 2F in Table 2 examine, for each sex, separately, the determinants of position and type of school, respectively. By using the formulae of Table 3, we estimate that 72 percent of the sex difference in position and 45 percent of the sex difference in type of school was due to discrimination (i.e., cannot be accounted for by differences in "endowments" of human capital variables).

34. See Levin (1968).

35. See Antos and Rosen (1975).

36. See San Francisco Unified School District (1946-47; 1947-48).

37. See National Education Association Research Bulletin (1971).

38. See Gordon and Strober (1975), for a discussion of the problems of increasing women's representation in management and strategies for dealing with these problems.

REFERENCES

Antos, Joseph R. and Rosen, Sherwin, "Discrimination in the Market for Public School Teachers," Journal of Econometrics, 1975.

Arrow, Kenneth, "The Theory of Discrimination," in Discrimination in Labor Markets, edited by Orley Ashenfelter and Albert Rees, Princeton University Press, Princeton, 1973, 3-33.

Bancroft, Hubert H., California Pastoral, The History Company, San Francisco, 1888.

Becker, Gary S., The Economics of Discrimination, University of Chicago Press, Chicago, 1957.

_____, Human Capital: A Theoretical and Empirical Analysis, Columbia University Press, New York, 1964.

Bergmann, Barbara R., "The Effect on White Incomes of Discrimination in Employment," Journal of Political Economy, March/April 1971, 79, 294-313.

_____, "Occupational Segregation, Wage, and Profits When Employers Discriminate by Race or Sex," Eastern Economic Journal, April-July 1974, 1, 103-10.

Blau, Francine D., and Jusenius, Carol L., "Economists' Approaches to Sex Segregation in the Labor Market: An Appraisal" in Women and the Workplace: The Implications of Occupational Segregation, edited by Martha Blaxall and Barbara Reagan, University of Chicago Press, Chicago, 1976, 181-201 (also Signs: Journal of Women in Culture and Society, Spring, 1976, 1, Part 26, 181-199).

Blau, Francine D., "The Impact of Sex and Ethnicity on Wages in the United States, 1909," unpublished manuscript, August 1977.

Blaxandall, Rosalyn, et. al, America's Working Women, Vintage Books, New York, 1976.

Blinder, Alan S., "Wage Discrimination: Reduced Form and Structural Estimates," Journal of Human Resources, Fall 1973, 8, 436-455.

Brownlee, W. Elliot and Mary M., Women in the American Economy: A Documentary History, Yale University Press, New Haven, 1976.

Cain, Glen G., "The Challenge of Segmented Labor Market Theories to Orthodox Theory: A Survey," Journal of Economic Literature, December 1976, 14, 1215-57.

Clement, Jacqueline, Sex Bias in School Administration, Integrated Education, Evanston, 1975.

Cloud, Roy W., Education in California: Leaders, Organizations, and Accomplishments of the First Hundred Years, Stanford University Press, Stanford, 1952.

Doeringer, Peter B., and Piore, Michael J., Internal Labor Markets and Manpower Analysis, D. C. Heath Co., Lexington, 1971.

Dolson, Lee S., "Administration of the San Francisco Public Schools, 1847-1947," unpublished Ph.D. dissertation, University of California, 1964.

Edgeworth, F. Y., "Equal Pay to Men and Women for Equal Work," Economic Journal, September 1922, 32, 431-57.

Elsbree, Willard S., The American Teacher: Evolution of a Profession in a Democracy, American Book Co., New York, 1939.

Fawcett, Millicent G., "Equal Pay for Equal Work," Economic Journal, March 1918, 28, 1-6.

Gordon, Francine E. and Strober, Myra H., eds., Bringing Women Into Management, New York: McGraw Hill, 1975.

Levin, Henry M., "Recruiting Teachers for Large City Schools," unpublished monograph, Brookings Institution, 1968.

Mincer, Jacob and Polocheck, Solomon, "Family Investments in Human Capital: Earnings of Women," Journal of Political Economy, March/April 1974, 82, 76-116.

National Education Association Research Bulletin, "Professional Women in Public Schools, 1970-71," National Education Association, October 1971.

Oppenheimer, Valerie K., The Female Labor Force in the United States: Demographic and Economic Factors Governing Its Growth and Changing Composition, Population Monograph Series, No. 5, Institute of International Studies, Berkeley, 1970.

Phelps, Edmund S., "The Statistical Theory of Racism and Sexism," American Economic Review, September 1972, 62, 659-61.

Prentice, Alison, "The Feminization of Teaching in British North America and Canada, 1845-1875," Histoire Social-Social History, May 1975, 13-15.

Reich, Michael, Gordon, David M. and Edwards, Richard C., "A Theory of Labor Market Segmentation," American Economic Review, May 1973, 63, 359-366.

Rotella, Elyce J., "Women's Participation in the U.S. Paid Labor Force, 1870-1930: The Decline of the Family Economy and the Rise of the Clerical Sector," paper presented to the Annual Meeting of the Social Science History Association, October 1977.

Sklar, Kathryn, Catherine Beecher: A Study in American Domesticity, Yale University Press, New Haven, 1973.

Smuts, Robert W., Women and Work in America, Schocken Books, New York, 1971.

Spence, Michael, "Job Market Signaling," Quarterly Journal of Economics, August 1973, 87, 355-74.

Swett, John, History of the Public School System of California, A. L. Bancroft & Company, San Francisco, 1876.

Tyack, David, The One Best System: A History of American Urban Education, Harvard University Press, Cambridge, 1974.

Vinovskis, Maris and Bernard, Richard M., "Women in Education in Ante-Bellum America," Center for Demography and Ecology, University of Wisconsin, Working Paper 73-7, 1973.

Watkins, T. H., California, An Illustrated History, Weathervane Books, New York, 1973.

Woody, Thomas, A History of Women's Education in the United States, The Science Press, New York, 1929.

DOCUMENTS

California, Department of Public Instruction, Reports of the State Superintendent of Public Instruction, 1865 and 1880.

San Francisco, Superintendent of Public Schools, Twenty-Sixth and Twenty-Seventh Reports of the Superintendent of Public Schools of San Francisco, W. M. Hinton Co., San Francisco, 1879 and 1880.

San Francisco Unified School Dist[illegible], Salary Schedules, 1946-47 and 1947-48.

U.S. Department of Commerce, Bureau of the Census. Census of Population. 1880, 1890, 1900.

U.S. Office of Education, Biennial Survey of Education, 1870, 1880, 1900.

Table 1

SAMPLE OF DATA FORMAT

HAYES VALLEY GRAMMAR SCHOOL.

McAllister Street, between Franklin and Gough Streets.

George Brown.....Principal.
A. J. Itsell.....Vice-Principal.
Mrs. F. E. Reynolds.....Vice-Principal.
I. Leszynsky.....Teacher of German.

| GRADE OF CLASS | NAME. | WHEN ELECTED. | GRADE OF CERTIFICATE. | RESIDENCE. | SALARY PER ANNUM. |
|---|---|---|---|---|---|
| ..... | George Brown..... | Mar. 11, '73 | Life Diploma .. | Windsor House..... | $2,400 |
| 1 | A. J. Itsell..... | Sept. 12, '71 | Life Diploma ... | 1832 O'Farrell..... | 1,800 |
| 1 | Mrs. F. E. Reynolds... | Sept. 13, '61 | Life Diploma ... | 1408 Sixth..... | 1,800 |
| 2 | Miss M. E. Lipman... | April 22, '73 | State Ed. Dip ... | 1011 Polk..... | 900 |
| 3 | Miss C. A. Templeton | Aug. 6, '78 | Life Diploma ... | 1536 Ellis..... | 900 |
| 3 | Miss A. M. Huntley.. | Oct. 21, '73 | Second Grade .. | 1211 Tyler..... | 900 |
| 3 | Miss K. O'Brien ..... | Sept. 10, '67 | State Ed. Dip.... | 319 Oak..... | 900 |
| 3 | Miss K. McFadden.... | Aug. 17, '69 | State Ed. Dip... | 1607 Turk..... | 900 |
| 4 | Miss N. A. Littlefield | Dec. 26, '65 | First Grade .... | 2316 Sacramento ..... | 900 |
| 4 | Miss Belle McNeill.. | Aug. 6, '72 | Second Grade.. | 441 Twenty-second..... | 900 |
| 4 | Miss K. E. Gorman... | Mar. 10, '68 | Second Grade.. | Brunswick House ..... | 900 |
| 4 | Mrs. M. Humphrey... | Feb. 12, '67 | Second Grade.. | 126 Rose..... | 900 |
| 5 | Miss M. M. Rowe..... | Aug. 1, '71 | Third Grade.... | 1517 ½ Taylor..... | 900 |
| 5 | Miss Q. O. McConnell | April 3, '77 | First Grade..... | 609 Hyde..... | 840 |
| 6 | Mrs. M. E. Caldwell.. | June 13, '68 | Life Diploma .. | 18 Mission avenue..... | 900 |
| 6 | Miss Frances Kalisher | Aug. 20, '78 | First Grade .... | 420 Van Ness avenue... | 840 |
| 7 | Miss Josie Thyes..... | Nov. 22, '76 | Second Grade .. | 839 Mission ..... | 840 |
| 8 | Mrs. A. F. Bibb ..... | July 23, '75 | Second Grade .. | 31 Stanley Place..... | 840 |
| ..... | I. Leszynsky,.. ..... | Oct. 21, '73 | First German .. | 233 Oak..... ... ..... | 1,200 |

Table 2

ESTIMATED REGRESSION COEFFICIENTS AND MEANS OF VARIABLES

| Dependent Variable | $\bar{R}^2$ | Sample Size | Mean of Dependent Variable | Independent Variables: Constant | Male | Experience | (Experience)$^2$ | Education: Second Grade | Education: Third Grade | Education: State Ed. | Education: Life | Education: Language | Position[a]: Vice Principal | Position[a]: Principal & Teacher | Position[a]: Principal Only | Type of School[f]: Grammar School | Type of School[f]: High School |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Position | .28 | 628 | 1.35[b] | .89 | 1.12** | .057** | -- | -.209 | -.236 | -.262* | .368** | -.493 | -- | -- | -- | -- | -- |
| 1M. Position | .04 | 50 | 2.58[b] | 1.76 | -- | .072 | -- | -.831 | N.I.S.[d] | -.060 | .560 | -.463 | -- | -- | -- | -- | -- |
| 1F. Position | .21 | 578 | 1.25[b] | .90 | -- | .055** | -- | -.201* | -.235* | -.261* | .364** | -.291 | -- | -- | -- | -- | -- |
| 2. Type Schl. | .17 | 628 | 1.52[c] | 1.32 | .369** | .012* | -- | -.015 | -.152* | .198** | .272** | .968** | -- | -- | -- | -- | -- |
| 2M. Type Schl. | .12 | 50 | 2.08[c] | 1.60 | -- | .020 | -- | -.619 | N.I.S.[d] | .316 | .291 | 1.12* | -- | -- | -- | -- | -- |
| 2F. Type Schl. | .10 | 578 | 1.47[c] | 1.32 | -- | .011* | -- | .008** | -.150* | .195** | .280** | .851** | -- | -- | -- | -- | -- |
| 3M. ln Salary | .18 | 50 | 7.47 | 6.96 | -- | .013 | .0003 | -.169 | N.I.S.[d] | .381 | .433* | .520* | -- | -- | -- | -- | -- |
| 4M. ln Salary | .79 | 50 | 7.47 | 6.76 | -- | -- | -- | -- | -- | -- | -- | -- | .370** | .379** | .670** | .352** | .896** |
| 5M. ln Salary | .77 | 50 | 7.47 | 6.59 | -- | .003 | -.0001 | .208 | N.I.S.[d] | .156 | .148 | .018 | .343** | .420** | .647** | .399** | .948** |
| 3F. ln Salary | .57 | 578 | 6.86 | 6.65 | -- | .036** | -.0005* | -.097** | -.137** | .000 | .131** | .312** | -- | -- | -- | -- | -- |
| 4F. ln Salary | .70 | 578 | 6.86 | 6.74 | -- | -- | -- | -- | -- | -- | -- | -- | .458** | .551** | .696** | .093** | .658** |
| 5F. ln Salary | .83 | 578 | 6.86 | 6.64 | -- | .034** | -.0009** | -.070** | -.107** | .009 | .007 | .206** | .318** | .466** | .521** | .043** | .488** |
| Means of Variables Men[a] | -- | 50 | -- | -- | -- | 6.90 (5.72) | 79.62 (145.05) | .02 (.14) | 0 | .12 (.33) | .70 (.46) | .10 (.30) | .14 (.35) | .12 (.33) | .26 (.44) | .52 (.50) | .28 (.45) |
| Means of Variables Women[a] | -- | 578 | -- | -- | -- | 6.60 (4.93) | 67.87 (96.60) | .19 (.39) | .13 (.34) | .14 (.35) | .23 (.42) | .01 (.08) | .01 (.12) | .02 (.15) | .05 (.21) | .40 (.49) | .04 (.19) |

a. Standard deviations in parentheses.

b. In 1, 1M and 1F, Position is measured as follows: 1 = Teacher Only; 2 = Teacher and Principal; 3 = Vice Principal; 4 = Principal.

c. In 2, 2M and 2F, Type of School is measured as follows: 1 = Primary; 2 = Grammar; 3 = High School.

d. None in sample.

e. Teacher only is omitted reference group.

f. Primary School is omitted reference group.

* Indicates significance at 5 percent level. ** Indicates significance at 1 percent level.

Table 3

Sources of the Female/Male Salary Differential

| | | Percent of Differential |
|---|---|---|
| **Sex Differences in "Endowments"** | | |
| (1) Human Capital Variables | .0324 | 5 |
| (2) Position Variables | .2248 | 37 |
| (3) Type of School Variables | .2754 | 45 |
| | .5350 | 87 |
| **Sex Differences in Rewards** | | |
| (4) Human Capital Variables | -.0325 | -5 |
| (5) Position Variables | .0009 | -- |
| (6) Type of School Variables | .1608 | 26 |
| (7) Constant | -.0500 | -8 |
| | .0792 | 13 |
| (8) Total | .6142 | 100 |

Note: The difference between the ln of mean male and female salaries, $\bar{W}_m - \bar{W}_f$, is attributed as follows: Differences in endowments are weighted by male regression coefficients, $\sum_{i=1}^{n} b_{im}(\bar{X}_{im} - \bar{X}_{if})$. Differences in rewards are weighted by female means, $\sum_{i=1}^{n} \bar{X}_{if}(b_{im} - b_{if})$. The total differential is equal to

$$\bar{W}_m - \bar{W}_f = \sum_{i=1}^{n} b_{im}(\bar{X}_{im} - \bar{X}_{if}) + \sum_{i=1}^{n} \bar{X}_{if}(b_{im} - b_{if}) + (a_m - a_f)$$

where $a_m$ and $a_f$ are the constant terms in the male and female regressions, respectively.